

**NAVY ENVIRONMENTAL HEALTH CENTER**

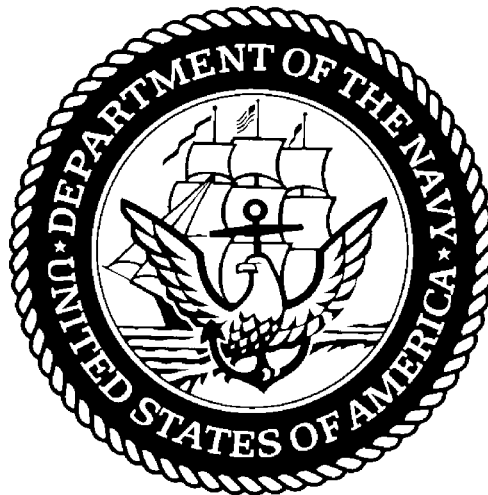


**Technical Manual NEHC-TM96-1**

**February 1996**

**A GUIDE FOR  
RESPIRATORY PROTECTION  
PROGRAM MANAGERS**

**NAVY ENVIRONMENTAL HEALTH CENTER**



**BUREAU OF MEDICINE AND SURGERY**

Reviewed and approved in accordance  
with SECNAVINST 5600.16A

---

CAPTAIN P. D. BARRY, MC, USN  
Commanding Officer

The purpose of the following document is to provide guidance to Navy Respiratory Protection Program Managers concerning the basic elements of respirator program administration and to provide an update of the changes in standards and regulations that effect the elements of the respiratory protection program. A fill-in-the-blank Respirator Standard Operating Procedure (attachment (1)) is included, which covers all aspects of the Navy Respirator Program. Comments and suggestions are encouraged and should be directed to:

Commanding Officer  
Navy Environmental Health Center  
2510 Walmer Avenue (Attn: IH)  
Norfolk, VA 23513-2617  
DSN: 864-5524 or (757) 363-5524  
FAX: (757) 445-7330  
E-mail address: [spelced@ehc50.med.navy.mil](mailto:spelced@ehc50.med.navy.mil)

# TABLE OF CONTENTS

---

<u>TOPIC</u>	<u>PAGE</u>
Minimally Acceptable Respiratory Protection Program	1
29 CFR 1910.134	1
ANSI Z88.2-1992, Practices for Respiratory Protection	7
OPNAVINST 5100.23D	12
OPNAVINST 5100.19C	18
Respirator Publications	21
Appendix (1) Generic Respiratory Protection Program - Policy and SOPs	A1
Appendix (2) BUMED ltr Ser 242/4U763989 of 18 Apr 94	A2
Appendix (3) Topics for future issues	A3
Appendix (4) User Evaluation Form	A4

# MINIMALLY ACCEPTABLE RESPIRATORY PROTECTION PROGRAM

---

The Minimally Acceptable Respiratory Protection (MARP) Program includes mandatory elements of the respirator program. Federal government, Navy regulations and national consensus standards discuss in detail the mandatory elements of the respirator program. One thing that all of these standards and instructions have in common is that engineering controls are always the method of choice for controlling personnel exposures. Respirators are used only if engineering controls are not feasible, or as an interim measure while engineering controls are installed or evaluated. Again, these mandatory elements are the minimal requirements and Respiratory Protection Program Managers (RPPMs) can always include more stringent requirements in their programs.

## 29 CFR 1910.134, Respiratory Protection

---

The Occupational Safety and Health Administration (OSHA) MARP is found in the Code of Federal Regulations - 29 CFR 1910.134, Respiratory Protection and is based on American National Standards Institute (ANSI) Z88.2-1969. A proposed revision of this standard was published in the Federal Register on 14 November 1994. Since provisions in the proposed standard are subject to change, this discussion will be limited to the current OSHA Respirator Standard. The requirements for OSHA's MARP are in paragraphs (b)(1) through

(b)(11) of the standard.

**Standard Operating Procedures:** The requirement for written standard operating procedures (SOPs) for each of the mandatory elements of the respirator program is in paragraphs (b)(1) and (e)(1). Written SOPs must be written for both emergency use and routinely used respirators. Written SOPs should contain sufficient detail for anyone to read them and understand how to perform the carry out the procedures in the SOPs.

**Respirator Selection:** Paragraph (b)(2) requires that respirator selection be based on the hazard to which the employee is exposed. According to paragraph (c), respirator selection must be made using the guidelines of ANSI Standard Z88.2-1969. ANSI Z88.2-1969 lists four factors that must be considered if proper respirator selection is to be made. These include the following:

The nature of the hazard. (paragraphs 6.3 and 4)

The extent and location of the hazard. (paragraph 6.4)

The work requirements and work conditions. (paragraph 6.5)

The characteristics and limitations of the respirators. (paragraph 5)

Use ANSI Z88.2-1969 with caution. It contains some outdated and dangerous recommendations in the selection guidance. For example, Table 6 recommends wearing full face gas masks in gas and vapor contaminants that are immediately dangerous to life or health (IDLH). It also recommends hose mask with blowers for IDLH atmospheres. Approval for using gas masks and hose masks with blowers for IDLH atmospheres was revoked when 30 CFR Part 11 was revised under the National Occupational Safety and Health Administration/Mine Safety and

Health Administration (NIOSH/MSHA) in 1978.

The following is a brief elaboration on the four factors mentioned above that must be considered prior to respirator selection.

The nature of the hazard must be known. Determine if the contaminant is a gas, vapor or particulate or if the atmosphere is oxygen deficient. Knowledge of odor thresholds and mucus membrane irritability is critical. Chemical breakthrough of the contaminant through the cartridge sorbent material will be unknown if the contaminant can not be detected by smell or by irritation. If this is the case, then supplied-air respirators must be worn instead of air-purifying respirators. However, end of service life indicator cartridges have been approved for use for several substances having poor warning properties. If the contaminant causes eye irritation, then a full-face respirator is required.

Consider the extent and location of the hazard. The concentration of the contaminant, its toxicological properties, and its permissible exposure limit must be known to determine the level of respiratory protection required. Use of escape respirators requires knowing the time required to reach an atmosphere containing breathable air. Respirator selection for fire-fighting or for entering atmospheres considered to be immediately dangerous to life or health (IDLH) require the most stringent respiratory protection (SCBA for fire fighting and SCBA or combination airline/SCBA for entering IDLH atmospheres).

Consider the work requirements and work conditions. The work requirements and work conditions must be considered. For example: an airline respirator would not be selected for employees who must cross railroad tracks or climb ladders because the air hose could become severed or tangled.

Consider the capabilities and limitations of respirators. Air purifying respirators designed to filter out particulates will not provide protection against gases or vapors and certainly will not supply oxygen for entering an oxygen

deficient atmosphere.

Training Program Elements: According to paragraphs (b)(3) and (e)(2) and (e)(5), employees who wear respirators must be instructed on how to properly use respirators along with training on the limitations of their respirators. The respirator user must be trained on how to don the respirator, how to adjust it, and how to determine if it fits properly. Training in respirator capabilities and limitations is critical to ensure that respirators are not worn in a hazardous atmosphere for which they will not provide adequate protection, such as wearing an air-purifying respirator into an oxygen deficient atmosphere. Training is also required for both workers and supervisors in respirator selection, respirator use and maintenance. Respirator issuers must also be adequately instructed to insure that the correct respirator is issued.

Respirator fit testing is another training requirement. The OSHA Respirator Standard does not differentiate between qualitative or quantitative fit testing. The following OSHA regulations contain protocols for quantitative fit testing:

Asbestos - Appendix C in 1910.1001 (General Industry), 29 CFR 1915.1001 (Shipyard), and 29 CFR 1926.1101 (Construction)

Cadmium (1910.1027, Appendix C)

Benzene (1910.1028, Appendix E)

Formaldehyde (1910.1048, Appendix E)

4,4-Methylenedianiline (1910.1050, Appendix E)

These standards, along with the lead standard (1910.1025), also have qualitative fit testing protocols.

Paragraph (e)(5)(i) prohibits wearing respirators when conditions prevent a good facepiece to face seal. Such conditions may include a beard, sideburns, or skullcap



projecting under the facepiece, temple pieces on glasses or loss of dentures. Any interference with the facepiece seal could result in contaminant leakage into the respirator causing employee exposure.

**Cleaning and Disinfecting Respirators:** As required by paragraphs (b)(5) and (f)(3), respirators must be regularly cleaned and disinfected. This applies only to those respirators that are routinely used throughout the day. Cleaning less than daily is acceptable if respirators are individually assigned and not frequently used. Clean routinely-used respirators as often as necessary to ensure that employees are afforded proper protection. Respirators used by more than one employee must be thoroughly cleaned and disinfected after each use. Emergency respirators must be cleaned after every use.

**Storage of Respirators:** Paragraph (b)(6) states that "Respirators shall be stored in a convenient, clean, and sanitary location." After cleaning, inspection and repair, respirators must be stored in such a manner as to protect them against dust, harmful chemicals, sunlight, excessive heat or cold, and moisture.

Paragraph (f)(5)(i), prohibits storing respirators in tool boxes or lockers unless respirators are in a carrying case or a carton. OSHA citations have been issued for respirators stored in tool boxes, work benches, spray paint booths, and wrapped around telephone poles.

**Respirator Inspection:** Per paragraph (b)(7), respirators that are used routinely must be inspected during the cleaning process. During inspection, identify worn or deteriorated parts and replace them. Parts from different respirator manufacturers can not be used even if they happen to fit. Combining parts from different manufacturers negates the NIOSH certification.

Respirators must be inspected by the user not only during cleaning, but also every time that respirators are donned or doffed (paragraph (f)(2)(i)). OSHA lists their inspection requirements in paragraph (f)(2)(ii) and (iii).

Paragraphs (b)(7) and (f)(2)(i) require that respirators for emergency use, such as a self-contained breathing apparatus, be thoroughly inspected at least once a month and after each use. A

log must be kept of inspection dates and findings for emergency respirators (paragraph (f)(2)(iv)).

The RPPM must assign only experienced personnel to repair respirators (paragraph (f)(4)). Only replacement parts designed for each specific make and model of respirator can be used. Also, no repairs beyond the recommendation of the manufacturer can be made. The more complicated repairs involving components such as reducing or admission valves or regulators must be performed by the manufacturer or by factory-certified technicians.

**Surveillance of Work Area Exposure:** Paragraph (b)(8) states, "Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained." This includes identifying the contaminants, the nature of the hazards, the concentration in the breathing zone and, if appropriate, biological monitoring. Air sampling results will give a good approximation of how well engineering controls are working. Similarly, biological monitoring (e.g., blood lead monitoring) can indicate the effectiveness of respiratory protection.

**Evaluation of the Respirator Program:** Paragraph (b)(9) requires that the respirator program undergo regular inspection and evaluation to determine the effectiveness of the program. ANSI Z88.2-1969 lists three techniques for evaluating the respirator program: (1) wearer acceptance, (2) examination of respirators, and (3) evaluation of protection afforded.

Wearer acceptance may depend on the following factors:

Comfort

Ability to breathe without objectionable effort

Adequate visibility

Provisions for wearing prescription glasses, if necessary

Ability to communicate

Ability to perform tasks without undue interference

Confidence in the facepiece fit

Failure to consider these factors is likely to reduce cooperation of the users in promoting an effective program. Wearer acceptance can be evaluated by observing respirator users during normal working activities. Interview employees and supervisors about the respirator program. Ask if the respirators are being cleaned, if new filters or cartridges are available, and if there are any problems wearing respirators.

Also examine respirators in the workplace. Perform frequent, random inspections to assure that respirators are properly selected, used, cleaned and maintained. Keep records of inspection findings.

Individuals in the respirator program who have exposure levels above the Action Level require medical surveillance. Medical surveillance may indicate whether the respirators are providing adequate protection or if additional engineering controls are necessary.

Medical Evaluation: Paragraph (b)(10) states:

"Persons should not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed periodically (for instance, annually)."

Some of the conditions that may prevent the user from properly wearing a respirator:

Emphysema

Chronic obstructive pulmonary disease

Bronchial asthma

X-ray evidence of pneumoconiosis

Evidence of reduced pulmonary function

Pernicious anemia

Heart disorders

Diabetes

Claustrophobia

Physical examination may reveal other disqualifying conditions, at the discretion of the examining physician.

Use "Approved" or "Accepted Respirators": OSHA requires that approved or accepted respirators be used (paragraph (b)(11)). An accepted respirator is one for which there are no established NIOSH test procedures, but which OSHA may evaluate and find acceptable. For example: a full body suit airline respirator is not included in the 42 CFR Part 84 approval schedule. However, it is an accepted form of respiratory protection when tested under the Los Alamos National Laboratory Acceptance-Testing Procedures for Air-line Supplied-Air Suits, LA-10156-MS.

Paragraph (b)(11) also requires that a respirator provide adequate respiratory protection against the particular hazard for which it is designed according to standards established by "competent authorities". This means that the appropriate respirator must be selected for the specific contaminant concentration or oxygen deficient atmosphere. "Competent authorities" originally referred to the U.S. Department of Interior, Bureau of Mines, and U.S. Department of Agriculture. Now, all respirators are tested and certified by NIOSH. NIOSH annually publishes the Certified Equipment List, which contains information on all respirators tested and currently certified by NIOSH.

# ANSI Z88.2-1992, Practices for Respiratory Protection

---

As mentioned earlier, the OSHA Respirator Standard, 29 CFR 1910.134, is based on the 1969 edition of ANSI Z88.2. The following are ANSI Z88.2-1992 additions or clarifications that should be incorporated into the 29 CFR 1910.134 MARP requirements.

**Program Administration:** There is no requirement in 29 CFR 1910.134 to appoint a specific program administrator to supervise the respirator program. Reference is made to a qualified individual supervising the respiratory protective program in paragraph (e)(2). In contrast, Clause 5.1 of ANSI Z88.2-1992 calls for appointing a program administrator who has been given the responsibility and authority for the respirator program. No specific training is recommended but the administrator should have sufficient knowledge of respiratory protection to supervise the respirator program properly and stay current on respiratory protection issues and regulations.

Clause 5 recommends assigning an industrial hygienist, health physicist, or safety specialist to administer the respirator program. Otherwise, assign a qualified person responsible to the facility manager. However, the standard does not define "qualified person" or "sufficient knowledge." A "qualified" individual could mean any person assigned the task, but that does not give the person sufficient knowledge to carry out the task. Knowledge could be obtained by studying the respirator instructions and standards and attempting to interpret them, or by attending specialized respiratory protection training course(s). Clause 5.2 does require that the administrator keep abreast of current issues/advances and regulations.

**Standard operating procedures (SOPs):** Clauses 4.5.2 and 6 set forth the elements of a written SOPs for the complete respirator program, including:

Training of wearers

Fit tests

Issuance

Cleaning, storage, and maintenance

Inspection

Monitoring use

Monitoring hazards

Selection

Company policies

Operating procedures for emergency and rescue use

Medical Evaluation: 29 CFR 1910.134 does not elaborate on the medical evaluation requirements for physiological and psychological limitations. Per ANSI Z88.2, a physician determines whether or not an employee has any medical conditions (physiological or psychological limitations) that preclude the use of respirators. The physician follows the guidance in ANSI Z88.6-1984 for frequency and content of the examination. The physician is advised by the respirator program manager on the following issues:

Types of respirators for normal and emergency use

Typical work activities, environmental conditions, frequency and duration of use

Hazards for which the respiratory equipment will be worn, including the potential exposures to reduced oxygen environments.

The employee is responsible for reporting any change in his/her medical status that could impact ability to wear a

respirator safely (Clause 4.4.4).

Respirator selection - Clauses 4.5.4 and 7 list the basis for selection, limitations and use. This includes worker activity, respirator use conditions, length of use, type of hazard, etc. ANSI Z88.2-1992 has a selection guide similar to the NIOSH Respirator Decision Logic.

Training: ANSI differentiates between supervisor, issuer, and routine user, and emergency/rescue team training topics. Unlike

the OSHA standard, written records must be kept of the names of persons trained and the dates when training occurred. Training and fit testing must be conducted annually.

The training for the respirator wearer includes motivational, descriptive, and instructional topics.

Motivational training topics encourages user willingness and motivation to wear their respirators. It provides users with reasons for needing respiratory protection. Workers are more willing and more likely to cooperate with the respirator program if someone explains why respirators are required and why engineering controls are not/can not be installed.

Ensure that users understand the nature, extent, and effects of the respiratory hazard(s) they are working with, including the measured contaminant levels in the shop as compared with the permissible exposure limit (PEL). Explain what hazards the respirator protects against (e.g., oxygen deficiency, gas, vapor or particulate contaminants). In simple terms, explain the physiological effects of the contaminant(s). Include general disease information as needed. For example, if asbestos is the hazard, tell workers about the disease mechanism, the latency period, and that asbestosis is a chronic exposure problem. Emphasize that even if they feel fine today, a problem may develop 20 or 30 years from now.

Tell workers about the efforts being made to reduce or eliminate the need for respirators. Workers are more inclined to wear respirators when they are assured that the command is not trying to get out of providing more permanent controls. This helps alleviate the feeling that the burden of protection has been put on the employees. Inform them that respirators

are used as a last resort or as an interim measure.

Employees must know what to do if their respirator malfunctions. Tell workers to inform their supervisor of any problems experienced by them or their co-workers. Instruct them to leave the contaminated area immediately and report the incident if their respirator malfunctions.

Descriptive topics include why a certain type of respirator is selected for the work operation and what its capabilities are. Explain the operation, the capabilities, and limitations of the respirator selected. Employees should understand how the respirator protects them and how it can fail. Explain why a particulate filter doesn't protect against vapors and why they can't wear single use dust respirator when cleaning out the degreaser.

Tell users if the toxic substance is in the raw material, the byproduct, the intermediate product, the end product or a combination.

Instructional topics provide usage instructions, general information on how to wear a respirator and requirements specific for the shop/division/work center, etc. Provide simple, easy instructions on inspecting, donning, checking the fit of, and wearing a respirator. Provide an opportunity for every wearer to handle a respirator, put it on, check the seal, and wear it in a safe atmosphere. Explain positive and negative pressure checks and why they must be done. Give a simple explanation of the qualitative or quantitative fit testing that they will go through. Actual fit testing can be done now as part of the training exercise.

Discuss proper respirator maintenance and storage procedures. Provide this information even if the worker will not be responsible for cleaning or storage. This gives workers insight into overall program procedures makes them aware of others' role in the program's success.

Give instructions on how to recognize and cope with emergency situations. Emergency instructions should be in shop SOPs. This lets employees know exactly where such instructions are posted and what they say.



Discuss any instructions for special respirator use including special problems in respiratory protection, such as temperature extremes, providing prescription spectacle kits (approved by NIOSH as part of the respirator assembly) to people who wear full facepiece respirators, communication problems, entering IDLH atmospheres and confined spaces. In addition, ensure that employees are aware of the following information:

Regulations on respirator use.

Give information specific to the training audience (i.e., information specific for their shop).

Who is in charge of the respirator program?

Who is required to wear a respirator?

What respirator is worn?

Where are they worn?

Where to go if a problem occurs?

Emergency and rescue team training must include emergency drills for team members wearing their emergency respirators while responding to the specific type of emergency/rescue operation that they will encounter (Clause 8.1.4).

The supervisor needs additional information to properly supervise the use and wearing of respirators. The minimum training topics for supervisors include:

Basic respiratory protection practices

Nature and extent of hazards to which workers may be exposed

Recognition and resolution of respirator use problems

Principles and criteria for respirator selection

Training the respirator users

Issuing respirators and fit testing

Respirator inspection procedures

Using respirators.

Monitoring use.

Maintenance and storage procedures

Regulations on respirator use

Clause 8.1.2 requires adequate training for the respirator issuer to ensure that the correct respirator is issued for each operation in accordance with written standard operating procedures.

Respirator Fit Testing: Guidance on fit testing is found in Clauses 4.5.6 and 9. Each wearer must be fit tested before being assigned a tight-fitting respirator. Either Qualitative or quantitative respirator fit test can be used to determine the ability of each wearer to obtain a satisfactory fit with a tight-fitting respirator, except as specified in a specific OSHA Standard (e.g., lead, asbestos, benzene).

ANSI Z88.10 is being developed to cover qualitative and quantitative fit testing protocols. However, until ANSI Z88.10 is published, the protocols in 29 CFR 1910.1001 should be followed.

Tight fitting negative pressure respirators fit tested by the qualitative protocols in 29 CFR 1910.1001 can be worn in contaminated atmospheres up to 10 times the PEL. Protection factors greater than 10 are assigned by successfully completing a quantitative fit test with a fit factor that is at least 10 times greater than the assigned protection factor.

Positive pressure respirators, including PAPRs, with

tight sealing facepieces must be qualitatively or quantitatively fit tested in a negative pressure mode to be assigned the assigned protection factors in Table 1. A quantitative fit factor of at least 100 must be obtained.

Facial Hair, Contact Lenses, and Eye and Face Protective Devices are discussed in Clause 7.5, which states that any respirator with a tight-fitting facepiece shall not be worn if facial hair comes between the sealing surface of the facepiece and the face, or if facial hair interferes with valve function. Contact lens may be worn with respirators if the user can demonstrate that they can successfully wear the respirator while wearing the contact lenses. All personal protective equipment, such as hard hats, head coverings, ear muffs, or safety glasses must not interfere with the seal of a respirator and must be worn during fit testing.

Maintenance, inspection, and storage: The maintenance program includes cleaning and sanitizing, inspection for defects, maintenance and repair, storage, and assurance of breathing air quality (Clauses 4.5.7 and 10).

Escape-only respirators: The policy for escape-only respirators is set forth in Clause 4.5.8. Personnel assigned to an area where escape-only respirators are provided for potential emergencies must be trained in their use. Visitors and personnel not assigned to the area are only briefed in the use of these respirators and are not required to receive medical approval or detailed training.

# **OPNAVINST 5100.23D, NAVY OCCUPATIONAL SAFETY AND HEALTH (NAVOSH) PROGRAM MANUAL**

---

This instruction is the Occupational Safety and Health Program manual for shore based Navy facilities. Chapter 15 details the minimum respiratory protection program for Navy shore-based facilities.

Responsibility: Section 1513 directs Commanders, Commanding Officers, and Officers-in-Charge to appoint a qualified respiratory protection program manager (RPPM) and to establish a respiratory protection program. Small commands having only a few employees wearing respirators are encouraged to negotiate an agreement with host commands for RPPM service.

As defined on page G-15 of the Glossary, the RPPM must meet the requirements for safety and health personnel as defined in Section 0902; be designated in writing by the commanding officer as the RPPM; and must successfully complete the training requirements of Chapter 15. The requirements in Section 0902 for safety and health personnel are defined as follows:

GS-018 - Safety and Occupational Health Manager and Safety Specialist

GS-803 - Safety Engineer

GS-019 - Safety Technician

GS-804 - Fire Protection Engineer

GS-081 - Fire Protection Specialist/Marshall

GS-1306 - Health Physicist

GS-690 - Industrial Hygienist

RPPM certification is no longer required. BUMED ltr 6260 Ser 242/4U763989 of 18 Apr 94 canceled the RPPM certification program (a copy of this letter is in Appendix 2). However, the RPPM must successfully complete one of the following courses to meet minimum training requirements:

Navy Respiratory Protection Program Manager Course

Occupational Safety and Health Administration (OSHA) Training Institute Course #222 or #222A

National Institute for Occupational Safety and Health (NIOSH) Respiratory Protection Course #593

Other 32 hour (minimum) course covering specified training topics

Minimum Respirator Program: The minimum respirator program defined in section 1513.a. covers the following elements:

Requires "A centrally located facility staffed to maintain and issue respiratory protection equipment." (section 1513.a(1))

Only respirators approved by NIOSH can be issued. (section 1513.a.(1)(a))

Requires inspecting, repairing, and cleaning respirators. (section 1513.a.(1)(b))

Recommends issuing respirators to individuals for their exclusive use.

Requires storing all respiratory protection equipment in a designated clean area. (section 1513.a.(1)(c))

Requires "Written standard operating procedures (SOPs) governing the selection, care, issue and use of respirators. Work site SOPs shall be developed and posted in the general area. SOPs shall include emergency and rescue guidance, as necessary." (section 1513.a.(2))

(A Generic Fill-in-the-blank Respirator SOP is in Appendix 1)

*It is important to note that the Navy requires written worksite specific SOPs in addition to the command's written standard operating procedures.*

Requires respiratory protection training, in accordance with ANSI Z88.2-1992, for all employees required to use respirators and for the supervisors of respirator users. Requires one hour initial training and at least annual refresher training (no time specified). (section 1513 a.(3) and 1511.a.)

Section 1511.a. also states that training is required for respirator issuers and emergency rescue teams.

Training requirements are listed in section 1511.a.

Respirator training must be documented in accordance with Chapter 6 of OPNAVINST 5100.23D.

Medical Evaluation: Section 1513.a.(4) requires that medical evaluations be performed in accordance with ANSI Z88.6-1984 and section 1513.b. ANSI Z88.6-1984 tells the physician what an industrial respirator is, what stresses are associated with wearing respirators, and medical certification requirements. ANSI Z88.6 specifies a medical history, medical examination, and special testing such as pulmonary function testing.

Medical Department Representatives must assist RPPMs with respirator selection. Appendix B of Chapter 15 includes a respirator selection guide and a table of assigned protection factors for the Navy. In addition, Medical Department Representatives ensure worker screening by questionnaire. The questionnaire in Appendix 15-D of Chapter 15 is recommended for medical screening. Medical Department Representatives must also provide medical evaluation for user qualification according to ANSI Z88.6-1984 and the Medical Surveillance Matrix Manual and Medical Matrix, edition 4, NEHC TM91-5. Upon completion of respirator physicals, medical statements are written for each user, noting whether they are qualified for respirator use, qualified (with restrictions specified) or not qualified. Pulmonary function testing is only required when considered necessary by the medical provider.

Personnel such as inspectors, visitors, or employees who must enter an area where respirators are required, even if their stay is 15 minutes or less, must be medically evaluated, trained, and fit tested. However, visitors and personnel not assigned to work areas where escape-only respirators are provided need only be briefed in their usage (Section 1502.a.(2)).

Humanitarian/Morale Issue Respirators: Section 1502.c states that training is mandatory but fit testing is optional for respirators issued for morale purposes. The single use respirators selected for morale purposes must be appropriate

for the perceived inhalation hazard. Personnel issued respirators for morale purposes must complete a worker screening questionnaire (Appendix D of Chapter 15), which is evaluated by the RPPM. An affirmative answer to any question requires referral to the Medical Department Representative.

Fit Testing: Section 1513.b.(4) requires that a Medical Department Representative provide assistance and service in conducting training and fit-testing programs. In addition, Navy Environmental and Preventive Medicine Units, shore based command safety offices and medical activities must make provisions for supporting ships in port for fit testing and program support (section 1513.a.(9)).

Fit testing requirements are set forth in sections 1509 and 1513.a.(5). At least qualitative fit testing is required for all respirators with tightly fitting facepieces. Positive pressure respirators with tightly fitting facepieces must be fit tested in the negative pressure mode using air purifying filters/ cartridges. Manufacturers of atmosphere supplying respirators, self contained breathing apparatus, and PAPRs make identical facepieces that can be fit tested in the negative pressure mode. Also many of these respirators are designed for interchanging breathing tubes with air purifying cartridges and can be qualitatively or quantitatively (with probed facepieces) fit tested.

Fit testing must be done initially and annually, unless more stringent requirements exist such as semi-annually for asbestos, lead, acrylonitrile, and inorganic arsenic. Quantitative fit testing must be done where required by OSHA. Examples include compliance with the standards for lead and asbestos.

Qualitative fit tests include subjective fit testing procedures which rely on the subject's ability to smell, taste, or react to the challenge agent. There are three types of qualitative fit tests. The isoamyl acetate (IAA) protocol uses banana oil (common name for isoamyl acetate) or isopentyl acetate and requires organic vapor cartridges. This protocol relies on the subject's honesty and ability to smell banana oil. The irritant smoke protocol uses ventilation smoke tubes and requires high efficiency particulate air (HEPA) cartridges. The test subject must be able to elicit a cough when the mucous membrane of the lungs are irritated. The

saccharin mist protocol was developed for single use dust and dust/mist respirators, but replaceable dust/mist filter respirators can be fit tested under this protocol. This test relies on the subject's ability to detect the sweet taste of sodium saccharin.

Quantitative fit testing determines the amount of leakage occurring between the sealing surface of the respirator and the face. There are two basic types of technologies, the controlled negative pressure method and the aerosol challenge method. The controlled negative pressure method measures the rate of pressure decay as a function of the rate of leakage into a sealed respirator. The aerosol challenge method measures and compares the concentration of a challenge test agent inside and outside of the respirator during a series of test exercises. Probed respirators with HEPA filters are required for the aerosol challenge methods.

Fit Factors numerically quantify the amount of sealing surface leakage. Fit factors in the controlled negative pressure method are calculated by dividing the measured leakage into the average pressure produced by inhalation at a moderate work rate. In the aerosol challenge method, the fit factor is calculated by dividing the concentration of the challenge test atmosphere outside of the respirator by the concentration of test atmosphere that has leaked into the respirator.

The quantitative fit test protocol in Appendix 15-C is taken from Appendix C of the Asbestos Standard for General Industry (29 CFR 1910.1001) and describes the protocol for quantitative fit testing with apparatus using light scattering photometry technology. Light scattering photometry determines the aerosol challenge agent concentration outside and inside the respirator by use of a photocell to measure the amount of light passing through the aerosol challenge agent. This fit test protocol does not apply to the TSI Portacount. Under section 1509.b., the TSI Portacount® Quantitative Fit Tester is also approved for Navy use. The Portacount® technology is based on condensation nuclei counting. The Portacount® uses dust particles in the ambient air as a challenge agent. Air samples are alternately drawn from outside the respirator and from inside the respirator. The particles travel into a warm chamber saturated with isopropyl alcohol vapor. The particles act as nuclei for alcohol vapors to surround. Next the particles and associated vapor pass through a condensation



chamber. The cool temperature inside the condensation chamber causes the vapor to condense on the small particles and form droplets. The droplets then pass through the counting chamber where a laser diode counts each droplet. The protocol developed by TSI should be used when fit testing with the Portacount.

There are legal requirements for quantitative fit testing under certain substance specific OSHA standards, which include the following:

Asbestos - 29 CFR 1910.1001, 29 CFR 1915.1001, and 29 CFR 1926.1101

Arsenic - 29 CFR 1910.1018

Lead - 29 CFR 1910.1025 and 29 CFR 1926.62

Cadmium - 29 CFR 1910.1027 and 29 CFR 1926.63

Benzene - 29 CFR 1910.1028

Acrylonitrile - 29 CFR 1910.1045

Formaldehyde - 29 CFR 1910.1048

4,4-Methylenedianiline - 29 CFR 1910.1050

Testing Breathing Air: All sources of supplied breathing air must meet requirements for Grade D air (section 1505). The criteria for Grade D air are found in Table 1 of ANSI/CGA G-7.1-1989. The minimum requirements for Grade D air are listed below:

Oxygen content	19.5 - 23.5%
Water	No liquid water
Oil	5 mg/m <sup>3</sup> (0.005 mg/l)
Carbon monoxide	10 ppm
Odor	No objectionable odor
Carbon dioxide	1000 ppm

Breathing air quality testing must be included in the Workplace Monitoring Plan. Oil-lubricated compressors must be monitored quarterly per section 1505.c. Ambient Air Breathing Apparatus are not required to be tested per section 1503.b.(4). Oil free compressors do not contain oil in the crank case and only require testing upon initial installation and after being overhauled.

Record Keeping: Employee exposure records must be retained per Chapter 8, section 0802.4. Section 0802.4 states that medical records will be kept at least 40 years. Industrial hygiene exposure data is entered into employee medical records using Standard Form 600.

Program Evaluation: The respirator program has two separate annual audits. Section 1513.b.(2) requires that local BUMED occupational health professionals review the effectiveness of the program based on industrial hygiene and occupational medicine reviews and provide an annual report to the respirator program manager. In addition, RPPMs must annually audit their programs (section 1513.a.(8)).

Section 1513.b.(3) requires that local BUMED occupational health professionals be available to the program manager for consultation.

# **OPNAVINST 5100.19C, NAVY OCCUPATIONAL SAFETY AND HEALTH (NAVOSH) PROGRAM MANUAL FOR FORCES AFLOAT**

---

This instruction is the Navy Occupational Safety and Health Program manual for forces afloat. Chapter B6 is the chapter covering respiratory protection. "Military unique" respirators such as the oxygen breathing apparatus (OBA) and the emergency escape breathing device (EEBD) are not covered by the NAVOSH program.

Minimal Respiratory Protection Program: Chapter B6 is the basic shipboard SOP. Ships may add guidance as desired. Guidance on respiratory protection unique to each ship must be written into the command instruction. Paragraph B0615 addresses guidance specific to submarines. Chapter B6 establishes the Minimally Acceptable Respiratory Protection Program for ships in paragraph B0603, which includes:

Written standard operating procedures.

Hazard-specific selection of respirators.

User training in the proper operation and limitations of respirators.

Regular cleaning and disinfection of respirators.

Convenient, clean, and sanitary storage of respirators.

Inspection, repair, and maintenance of respirators.

Industrial hygiene surveys to identify operations that require respirators and to recommend specific types of respirators.

Periodic monitoring and evaluation of program effectiveness.

Medical qualification.

Use of only NIOSH approved respirators for non-military unique operations.

Fit testing.

Commanding Officer's Responsibilities: Paragraph B0602.a requires the Commanding Officer to establish an effective respiratory protection program and make available sufficient resources to ensure personnel have proper respirators to perform their assigned tasks. This includes appointing a respiratory protection officer (RPO) and providing the RPO with appropriate training under paragraph B0612.b (respiratory protection training at the Navy Environmental and Preventive Medicine Units).

Paragraph B0612.b. requires RPOs aboard destroyer tenders (ADs), submarine tenders (ASs), aircraft carriers (CVs and CVNs), amphibious assault ships (LPHs, LHAs, and LHDs), and selected combat logistics ships (AOEs) attend the 5-day Respiratory Protection Program Manager's Course (B-322-2322) taught by the Naval Occupational Safety and Health, and Environmental Training Center (NAVOSHENVTRACEN). All other RPOs may attend the NAVOSHENVTRACEN's 1-day respiratory protection class entitled "Managing a Respiratory Protection Program" (B-322-2350).

**RPO Responsibilities:** The RPO's responsibilities are set forth in paragraph B0602.c. The RPO must ensure that up-to-date command guidance exists on respiratory protection, which includes OPNAVINST 5100.19C plus information unique to the command. It is the RPO who develops and maintains a list of personnel in the respirator program and ensures that respirator users are fit tested annually (semiannually if required for lead or asbestos work). The RPO ensures that respirator users, supervisors, and issuers are trained annually on respirator program requirements. Training and fit testing must be documented in personnel records.

Another responsibility is to coordinate with the Supply Officer to ensure that there is a sufficient supply of the proper respirators, cartridges, filters, and spare parts to conduct all routine and emergency operations. The RPO must also establish central control points for issuing and maintaining respirators. RPOs must ensure that air output from all compressors supplying breathing air meets at least the Grade D requirements. According to paragraph B0602.b, the RPO must spot check the respirator program's effectiveness quarterly. The respirator program is also evaluated annually by the Safety Officer and during the periodic industrial hygiene survey.

**Department Head, Division Officer Responsibilities:** The Department Head or Division Officer must provide the required respiratory protection equipment, ensure all personnel wearing respirators are trained, fit-tested, and medically qualified, and ensure that respirators are properly worn when required (paragraph B0602.d).

**Responsibilities of the Medical Department:** Paragraph B0602.e sets forth the responsibilities of the medical department, which includes conducting or scheduling medical evaluation of personnel identified by the respiratory protection officer as

respirator wearers. They must complete the Medical Clearance Request form (Appendix B6-B), which certifies whether an individual is medically qualified to use a particular respirator. All exposure records and the results of all respirator user medical evaluations are entered into the individual's medical records. The medical department must assist the respiratory protection officer, upon request, in identifying and evaluating hazards and selecting appropriate respirators.

# Respirator Publications

---

This section lists the current and anticipated OSHA Standards, NIOSH Guidelines, Navy Regulations, and National Consensus standards.

## Current Publications

### Navy Instructions

OPNAVINST 5100.23D, Chapter 15, dated 11 October 1994  
National Stock Number 0579-LD-057-3050

OPNAVINST 5100.19C, Chapter B6, dated 19 January 1994  
National Stock Number 0579-LD-057-1230

To order Navy instructions submit a DD Form 1149 or DD Form 1348 to your Supply Officer who will place a Milstrip requisition through the supply system. The instructions ultimately are shipped from:

Naval Publications and Forms Center  
5801 Tabor Avenue  
Philadelphia, PA 19120

### Code of Federal Regulations

29 CFR 1910.1045 - "Acrylonitrile"

29 CFR 1910.1001 - "Asbestos" (General Industry)

29 CFR 1926.1101 - "Asbestos" (Construction Industry)

29 CFR 1915.1001 - "Asbestos" (Shipyard Industry)

29 CFR 1910.1018 - "Inorganic Arsenic"  
29 CFR 1910.1028 - "Benzene"  
29 CFR 1910.1027 - "Cadmium"  
29 CFR 1910.1029 - "Coke Oven Emissions"  
29 CFR 1910.146 - "Confined Space Entry"

29 CFR 1910.1043 - "Cotton Dust"  
29 CFR 1910.1047 - "Ethylene Oxide"  
29 CFR 1910.156 - "Fire Brigades"  
29 CFR 1910.1048 - "Formaldehyde"  
29 CFR 1910.1025 - "Lead"  
29 CFR 1926.62 - "Lead" (Construction Industry)  
29 CFR 1910.1050 - "Methylenedianiline" (MDA)  
29 CFR 1910.134 - "Respiratory Protection"

42 CFR 84 - "Respiratory Protective Devices" Final  
Rule - NIOSH respirator testing and certification  
criteria will be published in the Federal Register as a  
series of modules over the next few years that will  
upgrade the 30 CFR 11 requirements - the first module is  
for particulate  
removing respirators.

Order Code of Federal Regulations from the US Government  
Printing Office.

Superintendent of Documents  
P.O. Box 371954  
pittsburgh, PA 15250-7954

(202) 512-1800

fax (202) 512-1356

American National Standards Institute (ANSI)

ANSI Z88.2-1992 - "Practices for Respiratory Protection"

ANSI Z88.3-1983 - "Practices for Respiratory Protection  
during Fumigation"

ANSI Z88.6-1984 - "Physical Qualifications for Respirator  
Use"

ANSI Z88.5-1981 - "Practices for Respiratory Protection  
for the Fire Service"

Order ANSI Standards from ANSI Headquarters.

American National Standards Institute  
11 West 42nd Street  
New York, NY 10036

(212) 642-4900  
fax (212) 302-1286

National Fire Protection Association

NFPA 1981 - "Open-Circuit Self-Contained Breathing  
Apparatus for Fire Fighters" 1992 edition

NFPA 1500 - "Fire Department Occupational Safety and  
Health Program" 1992 edition

NFPA 1404 - "Fire Department Self-Contained Breathing  
Apparatus Program" 1989

NFPA 1582 - "Medical Requirements for Fire Fighters"



1992 edition

Order NFPA Technical Documents from the National Fire  
Protection Association.

National Fire Protection Association  
1 Batterymarch Park  
Quincy MA 02269-9101

(617) 770-3000

NIOSH

Pub. No. 83-100 - "Hazardous Waste Sites and Hazardous  
Substance Emergencies"

Pub. No. 85-115 - "Occupational Safety and  
Health Guidance Manual for Hazardous Waste Site  
Activities"

Pub. No. 86-112 - "Hot Environments"

Pub. No. 87-108 - "Respirator Decision Logic"

Pub. No. 87-113 - "A Guide to Safety in Confined Spaces"

Pub. No. 87-116 - "A Guide to Industrial Respiratory  
Protection"

Pub. No. 89-107 - "Prevention of Transmission of Human  
Immunodeficiency Virus and Hepatitis B Virus"

Pub. No. 89-108 - "Guidelines for Prevention of  
Transmission of Human Immunodeficiency Virus and Hepatitis B  
Virus to Health Care and Public Safety Workers"

Pub. No. 90-117 - "Pocket Guide to Chemical Hazards"

Pub. No. 91-105 - "Certified Equipment List"

Order NIOSH Publications from NIOSH Publications.

NIOSH Publications  
Mail Stop C-13  
4676 Columbia Parkway  
Cincinnati, OH 45226-1998

(800) 356 4674  
fax (513) 533-8573

Compressed Gas Association

Pamphlet C-1 - "Methods for Hydrostatic Testing of  
Compressed Gas Cylinders," 1975, 6th edition

Pamphlet C-6 - "Standards for Visual Inspection of  
Steel Compressed Gas Cylinders," 1984, 6th edition -

Pamphlet C-6.1 - "Standards for Visual Inspection of  
High Pressure Aluminum Compressed Gas Cylinders,"  
1984, 2nd edition

Pamphlet C-6.2 - "Guidelines for Visual Inspection and  
Re-qualification of Composite High Pressure Cylinders,"  
1988, 2nd edition

Pamphlet G-7 - "Compressed Air for Human Respiration,"  
1989, 4th edition

Pamphlet G-7.1 - "American National Standard Commodity  
Specification for Air," 1989, 3rd edition

Pamphlet SB-2 - "Oxygen-Deficient Atmospheres," 1983,  
2nd edition

Order Pamphlets from the Compressed Gas Association, Inc.

Compressed Gas Association, Inc.  
Suite 1004  
1725 Jefferson Davis Highway  
Arlington, VA 22202-4100

(703) 412-0900  
fax (703) 412-0128

#### Proposed Standards

29 CFR 1910.134 - "Respiratory Protection" Proposed  
Rule dated 15 November 1994.

#### Anticipated New Publications

NIOSH "Selection and Use of Particulate Respirators  
Certified under the Provisions of 42 CFR 84"

ANSI Z88.10 - "Practices for Conducting Respirator Fit  
Tests" - Will cover qualitative and quantitative  
respirator fit testing protocols and fit test protocol  
validation.

ANSI Z88.8 - "Minimum Standards for Testing and  
Certifying Air Purifying Respirators" - Consensus standard  
of methods for testing particulate and gas or vapor  
respirators for NIOSH/MSHA approval.

ANSI Z88.7 - "Respirator Cartridge Color Coding"

ANSI Z88.9 - "Minimum Standards for Testing and Air  
Supplying Respirators"

# GENERIC RESPIRATORY PROTECTION PROGRAM - POLICY AND SOPS

---

The following documents are provided as models for command respirator policies and standard operating procedures (SOPs). They are comprehensive, and may seem too complete for your program. The intent is that the RPPM or RPO review the document package, choose only those applicable to his program, and then add or delete as necessary to tailor the instructions or SOPs to his program.

The first document is a model for establishing the command's Respiratory Protection Program. Subsequent enclosures cover all facets of the program.

Comments and suggestions are encouraged and should be directed to:

Commanding Officer  
Navy Environmental Health Center  
2510 Walmer Avenue (Attn: IH)  
Norfolk, VA 23513-2617  
DSN: 864-5524 or (757) 363-5524  
FAX: (757) 445-7330  
E-mail address: [spelced@ehc50.med.navy.mil](mailto:spelced@ehc50.med.navy.mil)

**Appendix (1)**

(Name of Command)                      **Instruction**                      (number)

---

**From:**    Commanding Officer, (Name of Command)

**Subj:**    RESPIRATORY PROTECTION PROGRAM

**Ref:**      (a) 29 CFR 1910.134, Occupational Safety and Health  
                 Administration Respiratory Protection Standard  
                 (b) OPNAVINST 5100.23D, Navy Occupational Safety and  
                 Health Program Manual  
                 (c) OPNAVINST 5100.19C, NAVOSH Program Manual for  
**Forces**  
                 Afloat  
                 (d) ANSI/CGA G-7.1-1989, Commodity Specification for  
**Air**

**Encl:**    (1) Worksite Standard Operating Procedures  
                 (2) Respiratory Protection Program Manager Appointment  
                 Letter  
                 (3) Respirator Selection Criteria  
                 (4) Respirator Maintenance  
                 (5) Respirator Inspection Procedures  
                 (6) Respirator Training, Fit Testing and Medical  
**Clearance**  
                 Record  
                 (7) Training  
                 (8) Fit Testing  
                 (9) Annual Respiratory Protection Program Audit  
                 (10) Weekly Respirator Inspections  
                 (11) Respiratory Protection Program Site Evaluation  
                 (12) Respirator Qualification Cards  
                 (13) Entry into IDLH or Oxygen Deficient Atmospheres

1.    Purpose.    To establish a respiratory protection program at  
the                      (name of command)                      as required by references (a) and  
(b).

2.    Basic Policy.    It is this command's policy to provide a  
safe and healthful work environment in compliance with all  
Navy and Federal standards. To protect employees from  
inhalation hazards produced during worksite operations,  
engineering controls will be used whenever possible to control  
air contaminants at their source of generation.

3.    Scope

a. This command has made a commitment to establish and maintain a respiratory protection program for the protection of employees where respirators are used: (1) as an interim measure until proper engineering controls can be installed; (2) where engineering controls are not feasible; (3) where emergency respirators are required; and (4) where respiratory protection must be worn in addition to engineering controls.

b. The respiratory protection program will include written Standard Operating Procedures (SOPs) for hazard assessment,

respirator selection and assignment, fit testing, medical surveillance, equipment cleaning, storage, inspection and maintenance, and program evaluation.

c. Standard operating procedures shall be developed for the specific respiratory protection requirements of each shop. Shop SOPs will be posted in the work areas and will include as a minimum: a summary of the command respiratory protection program standard operating procedures (see enclosure (1), Attachment A), shop-specific details concerning respirator selection, maintenance and inspection procedures (enclosure (1), Attachments B through E), breathing-air quality, if applicable (enclosure (1), Attachments F and G) and emergency and rescue guidance as appropriate .

#### 4. Responsibilities

a. Commanding Officer. The Commanding Officer is responsible for establishing a respiratory protection program and appointing a qualified respiratory protection program manager. (Enclosure (2) is a sample appointment letter).

b. Respiratory Protection Program Manager (RPPM). The RPPM must complete a training course as specified in reference (b).

(1) The responsibility for administration of this program rests with the respiratory protection program manager.

(2) The specific duties of the program manager include, but are not limited to:

(a) Selecting and purchasing appropriate and approved respiratory protection based on industrial hygiene survey reports and available literature.

(b) Training personnel in the proper use, limitations and maintenance of respirators.

(c) Conducting respirator fit testing.

(d) Developing a procedure for regular cleaning and inspection.



(e) Designating appropriate storage locations and procedures.

(f) Developing a procedure for inventory control.

(g) Establishing a medical surveillance program based on Bureau of Medicine (BUMED) industrial hygiene surveys and medical recommendations.

(h) Annual evaluation (audit) and modification of the written respirator program and standard operating procedures.

These responsibilities are further described in the enclosures.

c. Shop Supervisors. Shop supervisors must have a thorough understanding of every aspect of the command SOP and of Chapter 15 of reference (b). They shall ensure that:

(1) Respirators are properly worn and maintained by shop personnel.

(2) A copy of the command SOP is kept in each shop office.

d. Tool Room Attendants. Tool room attendants have responsibility for issuing, inspecting, maintaining and inventorying respirators. Additional information is provided throughout this instruction and in enclosures (1), (4) and (5).

e. Employees. Employees are responsible for inspecting their respirators and notifying the RPPM of any defects. Each employee must perform positive and negative fit checks on tight fitting respirators before each use. Employees shall also store their respirators according to procedures established in this instruction.

f. Bureau of Medicine (BUMED) (or Commanding Officer, Medical Treatment Facility). BUMED is required by reference (b) to provide the following services:

(1) Perform an annual industrial hygiene survey to identify the workplace hazards and recommend respiratory protection.

(2) Provide assistance for quarterly testing of breathing air supplied by oil-lubricated compressors to ensure it meets the grade D requirements of reference (c).

(3) Provide the RPPM with an annual written evaluation of the effectiveness of the respirator program.

(4) Medically evaluate personnel identified to wear respiratory protection.

## 5. Respiratory Protection Program Elements

### a. Respirator Selection

(1) Respirator selection is based on the hazards to which the employees are exposed, as determined by annual industrial hygiene surveys. Respirators are selected by the RPPM using the guidelines in enclosure (3).

(2) Only respirators jointly approved by the National Institute for Occupational Safety and Health (NIOSH) and Mine Safety and Health Administration (MSHA) will be worn.

b. Cleaning, Disinfecting, Issuing, and Inventory Control. Procedures for cleaning, disinfecting, issuing and inventorying respirators are in enclosure (4).

### c. Inspection, Repair and Storage

(1) Inspection. Respirator inspection will be conducted by the tool room attendants as they disassemble respirators for cleaning. Detailed procedures for inspecting half mask, full facepiece, gas mask, airline, SCBA, and hooded respirators are provided in enclosure (5). These procedures will be included in individual shop SOPs, as appropriate.

Employees shall inspect their respirators prior to donning them. They are also responsible for ensuring that cartridges are inserted correctly into the respirator (e.g., not cross-threaded). Defective or dirty respirators shall not be used.

(2) Repair. The RPPM shall ensure that tool room attendants are trained to perform respirator repairs. The tool room attendant will make no attempt to replace components or make adjustments beyond the recommendations of the manufacturer. Reducing or admission valves and regulators must be returned to the manufacturer or to a factory certified, trained technician for adjustment or repair.

(3) Storage. Each employee will store his respirator in a clean plastic bag in his locker. Storage in tool boxes is prohibited. Respirators will be laid flat in a natural position, and will be protected from sunlight, chemicals or excessive temperatures. Emergency respirators will be stored

in the shop location specified in the shop's SOP. (See enclosure (1), Attachment D).

(4) Emergency Respirators. Emergency respirators will be cleaned and inspected after each use according to the manufacturer's instructions. (See enclosure (1), Attachment E). Emergency respirators will be inspected monthly and a written

record (enclosure (1), Attachment D) will be maintained with the respirator.

d. Breathing Air Quality. Where breathing air is supplied by oil-lubricated compressors, quarterly testing is required to ensure that it meets the minimum Grade D requirements of the Compressed Gas Association Commodity Specification for Air, Pamphlet G-7.1-1989.

(1) e.g., BUMED, name of contractor, etc. is responsible for testing the breathing air. Results of these tests will be recorded on enclosure (1), Attachment F, for each shop using oil-lubricated breathing air compressors.

(2) Name of person in building number is responsible for recording the breathing air test results and ensuring that the oil lubricated compressors' carbon monoxide alarm system, high temperature alarm, sorbent beds and filters are maintained and inspected before each use and that the inspection results are recorded on enclosure (1), Attachment G. Name of person can be reached by telephone at number. Current copies of enclosure (1), Attachments F and G will be kept at the applicable shop offices.

(3) (Applicable to ships only) Use of ship's low pressure (LP) air as a breathing air source is prohibited unless the air is tested and certified as Grade D as required in paragraph 5.d. of this instruction.

e. Medical Evaluation. BUMED (Commanding Officer, MTF) will make all decisions regarding the medical evaluation and determination of the employees' physiological and psychological ability to wear a respirator.

(1) Each individual must be medically qualified by BUMED before initial fit testing.

(2) Shop supervisors will complete the top portion of the medical clearance form (enclosure (1), Attachment H), and shop personnel will hand carry the form with them to their respirator physical at the name of clinic Clinic. Upon completion of the respirator physical, the attending physician will complete the medical clearance form, and shop personnel will hand carry the form back to the shop supervisor.

(3) The RPPM will record the medical clearance information on the employees' record (enclosure (6)).

f. Training. Respirator training requirements are specified in enclosure (7). Shop SOPs for training are in enclosure (1), Attachment I.

g. Fit Testing. Fit testing procedures shall be performed as stated in enclosure (8).

h. Workplace Surveillance and Program Evaluation

(1) Workplace Surveillance. Personal air samples must be collected to determine 8 hour time weighted average (TWA) exposures and short term exposures. Air sampling is performed by the BUMED industrial hygienists. The results of the sampling will be made known to the employees within five days after they are received by this command.

(a) Shop supervisors will immediately contact the cognizant BUMED industrial hygienist when there are any changes in operations. The industrial hygienist will reevaluate the process and collect additional air samples if necessary.

(b) Shop supervisors will immediately notify the BUMED industrial hygienist when ventilation systems are implemented or changed. The industrial hygienist will evaluate the system and reevaluate the requirements for respiratory protection.

(2) Program Evaluation. The RPPM will:

(a) Conduct an annual audit of the respirator program. Enclosure (9) is provided as guidance.

(b) Conduct random, weekly inspections (enclosure (10)) of work areas where respirators are worn to ensure that the correct respirators are being used, that they are being worn properly and that they are in good working condition. The RPPM will maintain a record of inspection dates and findings using enclosure (11) and ensure that copies are provided to the appropriate shop supervisors.

(c) Per paragraph 1513.b.(2) of reference (b), BUMED will provide a written evaluation on the effectiveness of the respirator program to the program manager based on occupational medicine and industrial hygiene reviews. In agreement with the local BUMED industrial hygienist, this evaluation will be provided along with the annual industrial hygiene survey.

(d) The RPPM shall act immediately to correct all faults found in the program and/or procedures.

i. Record Keeping. The program manager will document the medical clearance, training, and fit testing, to include the type of respirator, brand name and model, method of fit test, test results, test date, and person performing the fit test (enclosure (6)). Completed Medical Clearance Forms (enclosure (1),

Attachment H) and printouts from quantitative fit testing must be attached to enclosure (6). Employees will be issued a card (enclosure (12)) indicating which model and size respirator(s) they are qualified to wear. This card must be presented at the time of respirator issue. Employees will immediately report lost or stolen cards to the RPPM so that a replacement can be issued.

The local BUMED industrial hygienist will ensure that exposure data is included in employee medical records per OPNAVINST 5100.23D, paragraphs 1513.a.(7) and 0802.4.

j. Entry into Immediately Dangerous to Life or Health (IDLH) or Oxygen Deficient Atmospheres. Standard operating procedures for entry into IDLH or oxygen deficient atmospheres are in enclosure (13).

k. Facial Hair, Contact Lenses and Humanitarian Issue of Respirators.

(1) Facial hair. Per paragraph 1509.a.(3) of reference (b), no respiratory protection equipment, except positive pressure supplied-air hoods, or loose fitting powered air purifying respirators where appropriate, will be worn by personnel when conditions such as beards, sideburns, etc., may prevent a good face seal.

(2) Contact Lenses. As stated in paragraph 1511.a.(5) of reference (b), soft and gas permeable contact lenses may be worn with respiratory protection. Hard contact lenses are strictly prohibited.

If wearing corrective eye glasses, lenses shall meet the ANSI Standard Z87.1 requirements. Spectacle kits will be provided for personnel who are required to wear full face respirators.

(3) Humanitarian Issue of Respirators. If respirators are issued to individuals requesting respiratory protection during operations where air contaminant levels are below the permissible exposure limits, the individuals shall comply with all requirements of the respirator program. This includes medical evaluation, fit testing, and training. (See section 1502.c. of OPNAVINST 5100.23D for less stringent requirements for humanitarian/morale respirators)

## WORKSITE STANDARD OPERATING PROCEDURES

Attachment A - Respirator Standard Operating Procedure

Attachment B - Respirator Selection Criteria

Attachment C - Respirator Maintenance

Attachment D - Emergency Use Respirators - Inspection Record

Attachment E - Emergency Use Respirators - Manufacturer's  
Inspection Instructions

Attachment F - Inspection of Oil-Lubricated Breathing Air  
Compressors

Attachment G - Inspection of Oil-Lubricated Breathing Air  
Compressors - Carbon Monoxide Monitor, Carbon  
Monoxide and High Temperature Alarms and  
Calibration and Filters, Desiccants and Sorbent  
Beds

Attachment H - Medical Clearance for Respiratory Protection

Attachment I - Respirator Training



Enclosure (1)

## RESPIRATOR STANDARD OPERATING PROCEDURE

SHOP number/name

Type of respirators respirators were chosen as protection against contaminant during the type of operation operation. The rationale for selecting the respirators used in this operation is in Attachment B.

The respiratory protection program manager (RPPM) will conduct inspections of this shop to ensure that the correct respirators are being used, that they are being worn properly and that they are in good working condition. The Respiratory Protection Program Manager's written record of inspection dates and findings shall be maintained with the shop SOP.

Before wearing respirators, all shop number/name personnel must be medically qualified, fit tested, and trained. It is the responsibility of shop number/name personnel to notify the respiratory protection program manager of any of the changes listed below or other circumstances that might interfere with the facial seal of the respirator.

1. weight change of 20 lbs.
2. facial scarring in area of face seal.
3. any dental changes
4. any reconstructive surgery or cosmetic surgery.

Each employee is responsible for properly wearing and maintaining their respirator. Respirator maintenance procedures are in Attachment C.

If airline respirators are used, refer to the shop's records (Attachments F and G) to ensure that grade D breathing air quality and compressor integrity have been maintained.

The RPPM is \_\_\_\_\_. He (she) is  
located in building number and can be reached at telephone number.

Attachment A

## RESPIRATOR SELECTION CRITERIA

SHOP number/name

Air sampling has revealed contaminant concentrations of number times the number (mg/m<sup>3</sup> or ppm) OSHA permissible exposure limit during the type of operation operation.

Name of contaminant Causes biological effect

. The physical and chemical properties of contaminant include incompatibilities with names of incompatible chemicals

This particular hazard will be corrected by implementing appropriate engineering controls, which will include an exhaust ventilation system. As an interim measure until the system can be installed, respiratory protective equipment will be used. (or Engineering controls are not feasible and respiratory protection is required during this operation. or Despite engineering controls, respiratory protection is still required during this operation.)

The required protection factor is value of protection factor. This was calculated by dividing the (time weighted average or ceiling limit) concentration of the contaminant, which is concentration of contaminant, by the (PEL or ceiling limit), which is value of the PEL or ceiling.

Respirators approved by Mine Safety and Health Administration (MSHA) and the National Institute of Occupational Safety and Health (NIOSH) must be used. Class of respirator respirators were selected based on their assigned protection factor of number. This will provide protection up to number times the PEL. Name of manufacturer and/or name of manufacturer respirators were selected based on the fit testing of employees. The respirators available to employees for the type of operation operation are as follows:

Name of manufacturer Type of respirator respirator, TC-21C-number  
model number (Small) number (Medium) number (Large)

Name of manufacturer Type of respirator respirator, TC-21C-number  
model number (Small) number (Medium) number (Large)

**Example:**

North dust/mist/fume respirator, TC-21C-331  
model 7509S (Small) 7509M (Medium) 7509L (Large)

Attachment B

## RESPIRATOR MAINTENANCE

SHOP number/name

### General

Respirator inspection is performed by the tool attendant in building number while disassembling the respirators for cleaning.

In addition, each employee is responsible for inspecting his or her respirator and notifying the respirator issuer (tool attendant) of any defects.

Each employee must perform positive and negative fit checks on tight fitting respirators before each use.

Respirators will be returned to the tool attendant in building number for cleaning and disinfecting according to the schedule indicated by the following code number: number.

Where:	1 = Daily	3 = Monthly
	2 = Weekly	4 = Other

### Inspection

Respirators used in this shop will be inspected as follows:

(Insert procedure(s), as appropriate, from enclosure (5)).

### Storage

Each employee will store his or her respirator in a clean plastic bag in his/her locker. Storage in tool boxes is prohibited. The respirator will be laid flat in a natural position, and will be protected from sunlight, chemicals or excessive temperatures. Emergency respirators will be stored in the shop location specified in Attachment D.

Employees must present a valid Respirator Qualification Card when requesting issue of a respirator.

Attachment C



--	--	--	--

Attachment D



EMERGENCY USE RESPIRATORS  
MANUFACTURER'S INSPECTION INSTRUCTIONS

SHOP number/name

Name of manufacturer Type of respirator respirator, TC-21C-number, model number

(Attach manufacturer's inspection instructions here or staple to this page).

**Attachment E**

# INSPECTION OF OIL-LUBRICATED BREATHING-AIR COMPRESSORS

SHOP number / name

[illegible]

--	--	--	--

Attachment F

INSPECTION OF OIL-LUBRICATED BREATHING-AIR COMPRESSORS

CARBON MONOXIDE MONITOR, CARBON MONOXIDE AND HIGH TEMPERATURE ALARMS  
FILTERS, DESICCANT & SORBENT BEDS

SHOP number/name

Date	CO/High Temp. Alarm Operational? Calibration?	CO Monitor Reading	Condition of Air Purifiers	Air Purifiers Changed (date)	Signature

--	--	--	--	--	--

Attachment G

## MEDICAL CLEARANCE FOR RESPIRATORY PROTECTION

SHOP number/name

Note: This page can be combined with Enclosure (6) to provide a complete one page respirator history document.

Employee \_\_\_\_\_ SSN \_\_\_\_\_

### SHOP SUPERVISOR COMMENTS

#### Type of Respirator

1. Air-supplied
2. SCBA
3. Air-purifying
4. Powered-air purifying
5. Combination airline/SCBA

#### Work Level

1. Light
2. Moderate
3. Heavy
4. Strenuous
5. IDLH Atmospheres

#### Frequency of Respirator Usage Use

1. Daily
2. More than once a week
3. Rarely, or emergency situation

#### Duration of Respirator

\_\_\_\_\_ (hours per

day)

#### Special Work Conditions (temperature extremes, climbing, other protective equipment, etc.)

---

---

---

---

### PHYSICIAN'S EVALUATION

1. No restrictions on respirator use
2. Respirator use with some restrictions
3. No respirator use allowed

#### Restrictions

---

---

---

---

Date of next medical evaluation\_\_\_\_\_

Physician's Signature\_\_\_\_\_ Date\_\_\_\_\_

Attachment H



## RESPIRATOR TRAINING

SHOP number/name

1. Respirators are required to be worn because the contaminant concentration in the work area is above the PEL.
2. contaminant causes biological effect.
3. Respirators are only an interim measure until proper ventilation can be installed to capture the contaminant at the source of generation (or Engineering controls are not feasible and respiratory protection is required during this operation. or Despite engineering controls, respiratory protection is still required during this operation.)
4. contaminant concentration is number to number times the PEL and the respirators were chosen because they provide a protection factor that is number times the PEL.
5. Limitations of different respirators:
  - a. Air-purifying respirators do not provide protection against oxygen deficiency and cannot be worn when there is less than 19.5% oxygen in the air.
  - b. Air-purifying respirators cannot be used in IDLH atmospheres.
  - c. Particulate filters remove particles in the air.
    - (1) Dust/fume/mist filters remove smaller particles than dust/mist filters and both types can be used as protection against contaminants with PELs above 0.05 mg/m<sup>3</sup>.
    - (2) High efficiency filters remove the smallest particles and are used as protection for contaminants having PELs below 0.5 mg/m<sup>3</sup>.
    - (3) Particulate filters cannot remove gas and vapor contaminants.
  - d. Chemical cartridges remove gases and vapors but will not remove particulates.

(1) Chemical cartridges have a maximum use concentration that is calculated by multiplying the PEL by the assigned protection of the respirator.

e. Airline respirator hoses are limited to a maximum hose length of 300 feet but not all airline respirators have been approved for 300 feet of hose.

Attachment I

(1) Airline respirators are not approved for IDLH atmospheres. Loss of the breathing air source eliminates any protection to the respirator wearer.

f. SCBAs are limited by service time of the air cylinder and weight of the unit.

6. Explain how to don the respirator, how to maintain and inspect the respirator, and how to perform positive and negative pressure fit checks.

7. Filters should be changed when breathing difficulty is experienced (or Chemical cartridges must be changed when break-through is experienced.)

a. Explain breakthrough (smelling the vapor/gas of concern).

b. Give any odor characteristics that may help employees identify when breakthrough occurs (e.g., isoamyl acetate smells like bananas; hydrogen sulfide smells like rotten eggs).

8. Inform employees what to do in emergency situations.

9. Explain shop-specific respirator problems concerning:

- a. Communications
- b. Vision
- c. Use in excessive heat or cold
- d. IDLH and oxygen deficient atmospheres
- e. Confined spaces.

10. Explain command policies concerning:

- a. Medical evaluation
- b. Facial hair
- c. Contact lenses
- d. Humanitarian issue of respirators.

11. Emergency rescue teams and all personnel required to enter IDLH atmospheres will receive training in the use of the emergency respirators by the manufacturer's technical representatives.

a. The gas free engineer will teach these individuals emergency IDLH atmosphere entry procedures and provide emergency practice scenarios.

RESPIRATORY PROTECTION PROGRAM MANAGER  
APPOINTMENT LETTER

From: Commanding Officer, (Name of Command)

To: Name of Appointee

Subj: RESPIRATORY PROTECTION PROGRAM MANAGER APPOINTMENT

Ref: (a) OPNAVINST 5100.23D, Chapter 15  
(b) 29 CFR 1910.134  
(c) Command Respiratory Protection Program SOP  
Instruction number

1. As required by reference (a), you are designated as the Respiratory Protection Program Manager (RPPM) for this command.

2. You will be familiar with all of the requirements of references (a) through (c) and ensure their implementation. Duties include, but are not limited to, respirator selection and purchase, personnel training and fit testing, respirator program oversight and evaluation and maintenance/revision of command instructions and standard operating procedures for respiratory protection.

3. This appointment remains effective until your detachment or reassignment.

Enclosure (2)

## RESPIRATOR SELECTION CRITERIA

The Respirator Selection Guide in Appendix 15-B of reference (b) shall be used for selecting respirators for protection against hazardous substances and oxygen deficient atmospheres and for providing the necessary criteria to support this selection.

Respirator selection for specific types of hazards adheres to the following criteria:

1. Fire brigades must use full face pressure demand self-contained breathing apparatus (SCBA).

Note: For ships, address use of the oxygen breathing apparatus (OBA) for fire fighting, damage control and fire fighter training. Specify that the OBA is military unique and is NOT NIOSH/MSHA approved, nor is it allowed for any other applications.

2. Respirators used for entry into and escape from oxygen deficient or immediately dangerous to life and health (IDLH) atmospheres must use full face pressure demand SCBAs or combination full face pressure demand airline with auxiliary SCBA.

3. For less than IDLH or oxygen deficient atmospheres, the minimum protection factor will be calculated by dividing the time-weighted average (TWA) exposure concentration by the permissible exposure limit for the contaminant. For contaminants with a ceiling limit, divide the maximum contaminant concentration by the ceiling limit.

- (a) Select the appropriate class of particulate, gas/vapor, or combination particulate and gas/vapor respirator in Tables 1 through 3 of the NIOSH Respirator Decision Logic. Make sure that the assigned protection factor is greater than the calculated minimum protection factor.

- (b) Special problems arise when the gas or vapor has no warning properties to allow one to detect chemical breakthrough in the cartridges.

In this case, airline respirators or cartridges with service life indicators must be used. The service life indicators must be visible to the respirator wearer.

4. Special considerations must be made for escape only respirators, such as the distance to the nearest area with breathable air.

Respirators are selected on the basis of the hazards to which the employees are exposed, as determined by the annual BUMED industrial hygiene surveys. Documentation for shop specific respirator selection is provided in enclosure (1), Attachment B.

Enclosure (3)

## RESPIRATOR MAINTENANCE

### General Information

Cleaning, disinfecting, drying, issuing and inventory of respirators will be conducted in building number. The tool attendant is responsible for disassembling, cleaning, disinfecting, and reassembling all respirators.

All respirators are cleaned and disinfected according to the following coded schedule:

1 = Daily

3 = Monthly

2 = Weekly

4 = Other

Cleaning codes are specified in each shop SOP (enclosure (1), Attachment C).

### Emergency Respirators

Emergency respirators will be cleaned and inspected after each use. Emergency respirators will be inspected monthly and a written record (enclosure (1), Attachment D) will be maintained with the respirator. The manufacturer's instructions for cleaning, disinfecting and inspecting emergency respirators (enclosure (1), Attachment E) will be followed.

### Disassembling Half Mask and Full Face Respirators

1. Remove filter and filter housing; discard filters.
2. Remove both inhalation valves.
3. Remove exhalation valve and exhalation valve guard.
4. Remove elastic straps and set aside for separate cleaning.

### Cleaning

1. Use warm soap and water solution, not to exceed 110°F.
2. Immerse all parts, excluding straps, in the solution.
3. Remove all dirt and grime.



4. Rinse in warm water, not to exceed 110°F, to remove  
all soap residue.

Enclosure (4)

### Disinfecting

1. Use a solution of 50 ppm hypochlorite (2 milliliters bleach per liter of water).
2. Immerse all parts, excluding straps, in the solution for 2 minutes.
3. Wipe straps, using a cloth dampened in the disinfectant solution.
4. Rinse all parts, excluding straps, in warm water (not to exceed 110°F) to remove disinfecting solution.

### Drying

1. Place parts in the drying unit at a temperature not exceeding 110°F. (OR Let respirators air dry for several hours.)
2. Place respirators such that there is no distortion of the rubber and other elastomeric parts.
3. Reassemble the respirator when parts are completely dry.  
(or Ensure respirators are dry by wiping with a clean, dry lint-free towel or cloth.)

### Issuing and Inventory Control

The tool room attendant is designated to issue respirators and is responsible for inventory control. The tool room attendant must be trained and thoroughly knowledgeable in the following areas:

1. Respirator selection for each shop listed in enclosure (1), Attachment C
2. Respirator cleaning, disinfection, and storage
3. Respirator inspection (enclosure (5))
4. Respirator inventory

Shop personnel will present their respirator qualification card (enclosure (12)) to the tool room attendant when requesting respirators.

Tool room attendants will ensure that:

1. The correct brand and type of air purifying cartridge is issued with the respirator (i.e., North cartridges are issued with North respirators).

2. Cartridges are free of dents and cracks.

Enclosure (4-2)

## RESPIRATOR INSPECTION PROCEDURES

### HALF MASK

Name of manufacturer   Type of respirator   respirator, TC-21C-number  
model number (Small)   number (Medium)   number (Large)

Name of manufacturer   Type of respirator   respirator, TC-21C-number  
model number (Small)   number (Medium)   number (Large)

1. Visually inspect facepiece for cracks, deformities, tears, dirt, and any modifications.
2. Inspect straps. They must be elastic, pliable and unfrayed. Straps must have points of attachment for the facepiece. No modifications are allowed.
3. Inspect inhalation and exhalation valves for tears, cracks, distortion, and foreign materials (e.g., hair, lint, or dirt). Make sure valves lay flat on valve assembly. Assure that exhalation valve cover is in place and not cracked or broken.
4. Inspect cartridges, cartridge holders, O-rings, threads, etc.

**Enclosure (5)**

## RESPIRATOR INSPECTION PROCEDURES

### FULL FACE

Name of manufacturer   Type of respirator   respirator, TC-21C-number  
model number (Small)   number (Medium)   number (Large)

Name of manufacturer   Type of respirator   respirator, TC-21C-number  
model number (Small)   number (Medium)   number (Large)

1. Ensure that the lens is not scratched, cracked, or broken.
2. Ensure that the lens is completely sealed.
3. Ensure the area where the lens holder comes in contact with rubber is not cut or torn.
4. If the respirator has a speaking diaphragm, ensure that it is in place and not punctured. Ensure the gasket is in place.
5. Straps must be elastic, pliable and unfrayed. Straps must have points of attachment for the facepiece. No modifications are allowed.
6. Make sure all the clips are present and the straps are attached securely to the mask.
7. Ensure that the inhalation valves are present and in good working order.

Enclosure (5-2)

RESPIRATOR INSPECTION PROCEDURES

GAS MASKS, AIRLINE RESPIRATORS AND SCBAs

Name of manufacturer    Type of respirator    respirator, TC-21C-number  
model number (Small)    number (Medium)    number (Large)

Name of manufacturer    Type of respirator    respirator, TC-21C-number  
model number (Small)    number (Medium)    number (Large)

GENERAL

1. Ensure that the lens is not scratched, cracked, or broken.
2. Ensure that the lens is completely sealed.
3. Ensure the area where the lens holder comes in contact with rubber is not cut or torn.
4. If the respirator has a speaking diaphragm, ensure that it is in place and not punctured. Ensure the gasket is in place.
5. Straps must be elastic, pliable and unfrayed. Straps must have points of attachment for the facepiece. No modifications are allowed.
6. Make sure all the clips are present and the straps are attached securely to the mask.
7. Ensure that the inhalation valves are present and in good working order.

AIRLINE RESPIRATORS

1. Ensure that the correct airline hose is used with supplied-air respirators. Are airline connections correct?
2. Ensure airline hose and respirator are made by same manufacturer.
3. Check hose integrity - cuts, deterioration, tears?

SCBAs



1. Follow manufacturer's recommended inspection procedures,  
enclosure (1), Attachment E.

Enclosure (5-3)

## CORRUGATED BREATHING TUBE

Name of manufacturer    Type of respirator    respirator, TC-21C-number  
model number (Small)    number (Medium)    number (Large)

Name of manufacturer    Type of respirator    respirator, TC-21C-number  
model number (Small)    number (Medium)    number (Large)

1. Stretch out the corrugated breathing tube. Inspect for cuts and abrasions. Ensure there are no pin holes in the corrugations.
2. Make sure that all required clamps are present.
3. Ensure gaskets are present in both ends of the breathing tube.
4. Check for cuts, gouges, and scratches on the threads.
5. Make sure that the canister is approved and that the shelf life has not expired.
  - a. If either canister seal is broken, the canister must be labeled with the date the seal was broken.
  - b. The canister must be discarded one year from the date that the canister was opened.
6. Ensure that the back- and front-mounted canisters have a harness assembly.

Enclosure (5-4)

## RESPIRATOR INSPECTION PROCEDURES

### HOODS

Name of manufacturer   Type of respirator   respirator, TC-21C-number  
model number (Small)   number (Medium)   number (Large)

Name of manufacturer   Type of respirator   respirator, TC-21C-number  
model number (Small)   number (Medium)   number (Large)

1. Examine the hood and its shroud for rips, tears, and seam integrity.
2. For abrasive blasting hoods, examine the integrity of the protective headgear and the suspension inside the headgear.
3. Examine the protective face shield for cracks, breaks or impaired vision.
4. Abrasive-blasting hoods must have a cape or a shroud that is not ripped or torn.
  - a. Ensure the buckles or snaps on the cape or shroud are present and in good working condition.
  - b. Ensure the collar is present under the shroud. It must fit tight around the neck by either a drawstring or an elastic collar.
  - c. The collar must be in good working condition with no tears or rips.
  - d. Inspect belts and hoses for tears or deterioration.
  - e. Check airline connections and valves.

Enclosure (5-5)

RESPIRATOR TRAINING, FIT TESTING AND MEDICAL CLEARANCE RECORD

SHOP number/name

Employee \_\_\_\_\_ SSN \_\_\_\_\_

## Training Codes

1. Respirator wearer
2. IDLH training
3. Respirator issuer
4. Supervisor

[illegible]

## Fit Testing Codes

1. Isoamyl acetate protocol
2. Irritant smoke protocol
3. Saccharine mist protocol
4. Quantitative

[illegible]

Fit Testing, attach print-out if applicable.

\*For Quantitative

Medical Clearance Code

purifying

airline/SCBA

1. Air-supplied

4. Powered-air

2. SCBA

5. Combination

3. Air-purifying

Date	Clearance for Respirator Type	Restrictions

Enclosure (6)



## TRAINING

Respirator training is required to ensure that everyone required to wear a respirator is properly informed of respiratory hazards and the possible consequences resulting from not wearing the respirator; the reason for wearing a particular type of respirator; the capabilities and limitations of the respirator; the method of donning the respirator and checking its operation; methods of respirator maintenance; and recognizing and dealing with emergency situations.

### Responsibility

The RPPM designated by the Commanding Officer will establish an SOP for all aspects of the training and the fit testing process.

The RPPM will ensure all training and fit testing is done in accordance with this SOP. The RPPM is responsible for maintaining and repairing all fit testing equipment.

### Training

Prior to initial fit testing, the program manager will ensure employees receive at least one hour of training developed specifically for using and maintaining the respirator selected for their shop operation. In addition, annual refresher training is required.

Respirator wearers must receive the training specified in the shop specific respirator training (enclosure (1), Attachment I), which includes:

1. Why respirators are required, including specific workplace hazards and respirator selection for their shop.
2. Status of engineering controls.
3. Respirator limitations.
4. How to don the respirator and perform positive and negative fit checks.
5. Respirator cleaning, disinfection, and storage procedures.
6. Respirator inspection.
7. Respirator issue.

8. Breathing air quality, inspection and maintenance (if supplied-air respirators are used in the shop).
9. When to change filters (if air-purifying respirators are used in the shop).

Enclosure (7)

10. Location of the shop respirator SOP in workplace.
11. What to do in emergency situations.
12. Shop specific respirator problems, including communications, vision, use in excessive heat or cold, IDLH and oxygen deficient atmospheres and confined spaces.
13. Use of the emergency respirators for emergency rescue teams and for all personnel required to enter IDLH or oxygen deficient atmospheres. The gas free engineer will provide training on emergency IDLH atmosphere entry procedures and provide practice emergency scenarios.

Supervisors must be trained and thoroughly knowledgeable in the following areas:

1. Workplace hazards and respirator selection for their shop.
2. Training received by their employees.
3. Respirator cleaning, disinfection, and storage.
4. Respirator inspection.
5. Respirator issue.
6. Breathing air quality, inspection and maintenance.

The tool attendant, assigned to issue, inspect, and inventory respirators, must be trained and thoroughly knowledgeable in the following:

1. Respirator selection for each shop.
2. Respirator cleaning, disinfection, and storage.
3. Respirator inspection.
4. Respirator inventory procedures.

Inform employees that Chapter 15 of OPNAVINST 5100.23D is the Navy regulation for respirator use, and inform them that a copy of Chapter 15 and of the Command Respirator SOP are located in each shop office.

**Enclosure (7-2)**

## FIT TESTING

### Employee Selection of Respirators

Each individual must be medically qualified and have enclosure (1), Attachment H completed before initial fit testing.

Employees will be instructed how to don respirators prior to respirator selection. Employees will wear the respirator at least 10 minutes prior to fit testing.

When eyeglasses must be worn with the respirator the respirator will be fit tested while wearing the eyeglasses.

The following respirators will be provided for employees to select the best fitting and most comfortable respirator:

Name of manufacturer Type of respirator respirator, TC-21C-number  
model number (Small) number (Medium) number (Large)

Name of manufacturer Type of respirator respirator, TC-21C-number  
model number (Small) number (Medium) number (Large)

Name of manufacturer Type of respirator respirator, TC-21C-number  
model number (Small) number (Medium) number (Large)

Name of manufacturer Type of respirator respirator, TC-21C-number  
model number (Small) number (Medium) number (Large)

### Qualitative Fit Testing Protocol

Qualitative fit testing will be performed in accordance with Appendix D of 29 CFR 1910.1025.

If an employee cannot pass the threshold test for isoamyl acetate, then the irritant smoke fit testing protocol will be used. If disposable dust respirators are worn, fit testing will be performed with the saccharine mist protocol.

Organic vapor cartridges will be used for the isoamyl acetate fit testing procedure.

HEPA filter cartridges will be used for the irritant smoke fit testing procedure.

All other required personal protective equipment will be worn with the respirator during fit testing procedures.

Enclosure (8)

## Quantitative Fit Testing Protocol

If full face respirators are used as protection against lead or asbestos concentrations exceeding 10 times the permissible exposure limits (PELs), quantitative fit testing must be performed. The Portacount Quantitative Respirator Fit Tester will be used for the fit test. The fit test will be performed as recommended by the Portacount Instruction Manual. Half mask respirators may be quantitatively fit tested at the discretion of the RPPM.

HEPA filters will be used for quantitative fit testing with the Portacount.

The passing criteria for full face respirators is a fit factor of \_  
specify fit factor, dependent on contaminant(s).

The passing criteria for half mask respirators is a fit factor of \_  
specify fit factor, dependent on contaminant(s).

## Fit Testing Frequency

Employees wearing respirators as protection against lead and asbestos will be fit tested semi-annually. All other fit testing will be performed annually. The RPPM will ensure employee fit testing is recorded on enclosure (6).

Fit testing will also be performed when the employee has experienced:

1. weight change of 20 pounds or more
2. facial scarring in area of face seal
3. any dental changes
4. any reconstructive surgery or cosmetic surgery

It is the employee's responsibility to notify his supervisor and the RPPM of any of the above or other circumstances that might interfere with the facial seal of the respirator.

**Enclosure (8-2)**



## RPPM's ANNUAL RESPIRATORY PROTECTION PROGRAM AUDIT

Are engineering controls used where feasible to control workplace contamination? (OPNAVINST 5100.23D, paragraph 1501 and 29 CFR 1910.134(a)(1))

Has the command appointed a respiratory protection program manager in writing? (OPNAVINST 5100.23D, paragraph 1501.c.)

Is the respiratory protection program manager in one of the following Office of Personnel Management position series: GS-018, Safety and Occupational Health Manager; GS-803, Safety Engineer; GS-019, Safety Technician; GS-0804, Fire Protection Engineer GS-0081, Fire Protection Specialist/Marshall; GS-1306, Health Physicist; or GS-690, Industrial Hygienist? (OPNAVINST 5100.23D, Glossary, page G-15, RPPM)

Has the respiratory protection program manager received training according to OPNAVINST 5100.23D, paragraph 1512?

Are standard operating procedures (SOPs) written for each shop and every aspect of the respirator program, including: respirator selection, cleaning, disinfecting, storage, issue, inspection, emergency respirator use, workplace surveillance, program evaluation, medical evaluation, training, fit testing? (OPNAVINST 5100.23D, paragraph 1513.a.(2))

Have work site SOPs been written and posted in the general area? (OPNAVINST 5100.23D, paragraph 1513.a.(2))

Are SOPs up-to-date with current workplace operations and industrial hygiene survey findings?

Does the local industrial hygienist perform an annual audit of the respirator program? (OPNAVINST 5100.23D, paragraph 1513.b.(2))

Does the RPPM perform an annual audit of the respirator program?  
(OPNAVINST 5100.23D, paragraph 1513.a.(8))

Does the respirator program manager perform routine evaluations of the respirator program, including field observations of personnel wearing respirators, respirator storage and maintenance?

Enclosure (9)

Are respirators selected according to the specific hazard for which protection is required, along with the protection factor and capabilities of the respirator? (OPNAVINST 5100.23D, paragraph 1506)

Are only NIOSH/MSHA approved respirators being used? (OPNAVINST 5100.23D, paragraph 1506.a.)

Are respirators cleaned and disinfected according to instructions in the SOP? (OPNAVINST 5100.23D, paragraph 1510)

Are respirators inspected for worn, torn, or deteriorated parts? (OPNAVINST 5100.23D, paragraph 1510)

Are respirators stored in convenient, clean, and sanitary locations? (OPNAVINST 5100.23D, paragraphs 1510.b.(8) and 1513.a.(1)(c))

Are emergency respirators inspected monthly? (OPNAVINST 5100.23D, paragraph 1510.d.)

Is a written record kept of the monthly emergency respirator inspections? (OPNAVINST 5100.23D, paragraph 1510.d.)

Has the person issuing respirators received proper training to ensure that the correct respirator is issued for each operation in accordance with written standard operating procedures? (ANSI Z88.2-1992, clause 8.1.2)

Have shop supervisors received proper training concerning the hazards to which employees are exposed, respirator selection, proper donning procedures, and proper respirator cleaning, maintenance, and storage? (OPNAVINST 5100.23D, paragraphs 1511.a. and 1513.a.(3))

Do respirator wearers receive annual training according to the guidelines of clause 8.1.3 of ANSI Z88.2-1992, to include: the nature and degree of respiratory hazards, respirator selection based on the hazard, respirator capabilities and limitations, and respirator cleaning, maintenance, and storage?

(OPNAVINST 5100.23D, paragraph 1513.a.(3))

Enclosure (9-2)

Have personnel wearing emergency respirators received proper training for entering and escaping from IDLH atmospheres? (OPNAVINST 5100.23D, paragraph 1508)

Have respirator wearers had respirator physicals? (OPNAVINST 5100.23D, paragraphs 1513.a.(4) and 1513.b.(1))

Are respirator wearers fit tested annually? (OPNAVINST 5100.23D, paragraphs 1509.a. and 1513.a.(5))

Are personnel who wear respirators as protection from lead or asbestos fit tested semi-annually? (OPNAVINST 5100.23D, paragraphs 1509.a., 1509.b. and 1513.a.(5))

Are employees with beards prohibited from wearing all respirators except positive pressure supplied-air hoods or loose fitting powered air purifying respirator? (OPNAVINST 5100.23D, paragraph 1509.a.(3))

Are written records of employee exposure records, fit testing and medical evaluation record kept forty years as per paragraph 0802.4 of OPNAVINST 5100.23D? (OPNAVINST 5100.23D, paragraphs 1509.c. and 1513.a.(7))

Has quantitative fit testing been performed for full face respirators worn as protection against lead or asbestos concentrations exceeding ten times the PEL? (OPNAVINST 5100.23D, paragraphs 1509.b. and 1513.a.(5))

Is air from oil-lubricated breathing air compressors tested quarterly to ensure that it meets Grade D air requirements? (OPNAVINST 5100.23D, paragraph 1505)

Are industrial hygiene surveys performed to evaluate employee exposure, including sample result documentation in employee medical records? (OPNAVINST 5100.23D, paragraph 0802)

**Enclosure (9-3)**

## WEEKLY RESPIRATOR INSPECTIONS

Are engineering controls being used where feasible to control workplace contamination? (OPNAVINST 5100.23D, paragraph 1501.b. and 29 CFR 1910.134(a)(1))

Have work site SOPs been written and posted in the general area? (OPNAVINST 5100.23D, paragraph 1513.a.(2))

Are standard operating procedures (SOPs) written for each shop and every aspect of the respirator program, including: respirator selection, cleaning, disinfecting, storage, issue, inspection, emergency respirator use, workplace surveillance, program evaluation, medical evaluation, training and fit testing? (OPNAVINST 5100.23D, paragraph 1513.a.(2))

Are respirators selected according to the specific hazard for which protection is required, along with the protection factor and capabilities of the respirator? (OPNAVINST 5100.23D, paragraph 1506)

Are only NIOSH/MSHA approved respirators being used? (OPNAVINST 5100.23D, paragraph 1506.a.)

Are respirators cleaned and disinfected according to instructions in the SOP? (OPNAVINST 5100.23D, paragraph 1510)

Are respirators inspected for worn, torn, or deteriorated parts? (OPNAVINST 5100.23D, paragraph 1510)

Are respirators stored in convenient, clean, and sanitary locations? (OPNAVINST 5100.23D, paragraphs 1510.b.(8) and 1513.a.(1)(c))

Are emergency respirators inspected monthly? (OPNAVINST 5100.23D, paragraph 1510.d.)

Is a written record kept of the monthly emergency respirator inspections? (OPNAVINST 5100.23D, paragraph 1510.d.)

Enclosure (10)



Are employees with beards prohibited from wearing all respirators except positive pressure supplied-air hoods or loose fitting powered air purifying respirators? (OPNAVINST 5100.23D, paragraph 1509.a.(3))

Is air from oil-lubricated breathing air compressors checked quarterly to ensure that it meets Grade D air requirements? (OPNAVINST 5100.23D, paragraph 1505)

Have personnel on emergency rescue teams and all personnel wearing emergency respirators received proper training for entering and escaping from IDLH atmospheres? (OPNAVINST 5100.23D, paragraph 1508)

Have respirator wearers had respirator physicals? (OPNAVINST 5100.23D, paragraphs 1513.a.(4) and 1513.b.(1))

Are respirator wearers fit tested annually? (OPNAVINST 5100.23D, paragraphs 1509.a. and 1513.a.(5))

**Enclosure (10-2)**


## RESPIRATORY PROTECTION PROGRAM SITE EVALUATION

**SHOP** number/name

[illegible]

**Enclosure (11)**

## SUGGESTED RESPIRATOR QUALIFICATION CARD

NAME OF COMMAND	
	
	RESPIRATOR
QUALIFICATION	
photo	

Type of Respirator	_____	_____	_____
Brand of Respirator	_____	_____	_____
Model #	_____	_____	_____
Size	_____	_____	_____

ENTRY INTO IMMEDIATELY DANGEROUS TO LIFE OR HEALTH  
(IDLH) OR OXYGEN DEFICIENT ATMOSPHERES

The gas free engineer,                     name of person                     must issue an entry permit prior to confined space entry. The gas free engineer must continuously ventilate the space and monitor the operation.

Either a full facepiece, pressure demand, self-contained breathing apparatus (SCBA), or a full facepiece, pressure demand, air-line respirator equipped with an auxiliary self-contained air supply rated for 15 minutes, minimum, must be worn in both oxygen-deficient and IDLH atmospheres. If the auxiliary air supply does not contain enough air to ensure escape in the event of airline failure then a SCBA must be worn. The respirators chosen for entry into IDLH or oxygen-deficient atmospheres are:

Name of manufacturer Type of respirator respirator, TC-21C-number  
model number (Small) number (Medium) number (Large)

Name of manufacturer Type of respirator respirator, TC-21C-number  
model number (Small) number (Medium) number (Large)

At least one trained standby person equipped with the appropriate respirator must be present in the nearest uncontaminated area. The standby person may not enter the IDLH atmosphere, unless a second standby person with an appropriate respirator is in the uncontaminated area.

The standby person must communicate continuously with personnel working in the IDLH atmosphere using radio manufacturer & model radios.

NOTE TO MANAGERS: Other forms of communication (i.e., visual, telephone) are allowed. Specify the method(s) being used by your command.

**Enclosure (13)**

All personnel entering an IDLH atmosphere must be equipped with safety harnesses and lines for rescue purposes should they lose consciousness. The safety lines must be attached to the name of hoist manufacturer & model hoist, which will be present in case personnel must be removed from the IDLH atmosphere.

All personnel required to enter IDLH atmospheres will receive training in the use of the emergency respirators by the manufacturer's technical representatives. The gas free engineer will teach these individuals emergency IDLH atmosphere entry procedures and provide emergency practice scenarios.



**Enclosure (13-2)**



DEPARTMENT OF THE NAVY  
BUREAU OF MEDICINE AND SURGERY  
2330 E STREET NW  
WASHINGTON, DC 20372-5333

IN REPLY REFER TO

6260  
Ser 242/4U763989  
18 Apr 94

From: Chief, Bureau of Medicine and Surgery

Subj: ADVANCE NOTICE OF CANCELATION OF THE NAVY RESPIRATORY  
PROTECTION PROGRAM MANAGER (RPPM) CERTIFICATION PROGRAM

Ref: (a) NAVENVIRHLTHCEN ltr 6260 Ser 3331/10089 of 9 Oct 90  
(b) NAVENVIRHLTHCEN ltr 6260 Ser 333/12127 of 13 Dec 90  
(c) OPNAVINST 5100.23C, Chapter 15

1. References (a) through (c) established the RPPM training certification program. RPPM training certification included initial 40-hour training and certification by the Navy Environmental Health Center (NAVENVIRHLTHCEN) and recommended triennial refresher training.

2. In 1993, the Navy Occupational Safety and Health (NAVOSH) Navy Training Plan Steering Committee considered changing the RPPM refresher training from "recommended" to "required." The decision was reached to leave it as recommended. As a result of this, administrative tracking of certification is no longer required.

3. Therefore, effective immediately, RPPM certification is canceled and NAVENVIRHLTHCEN will no longer issue nor track RPPM certification. Records of RPPM training must be kept by the local activity for documentation during NAVOSH inspections (Navy EG, Medical CG, OSHMES, etc.). Before being appointed as RPPM, one of the following courses is required per reference (c):

a. The Occupational Safety and Health Administration (OSHA) Training Institute Course 222 or 222A

b. The National Institute of Occupational Safety and Health (NIOSH) Course 593

c. The Navy RPPM Course

d. Any respiratory protection course that has at least 32 hours of training and covers the topics listed below:

(1) Respiratory hazards

(2) Federal standards applicable to respirators

(3) Minimum respiratory protection program requirements and administration

(4) Respirator types, selection, certification, and limitations

Appendix (2)

Subj: ADVANCE NOTICE OF CANCELTION OF THE NAVY RESPIRATORY  
PROTECTION PROGRAM MANAGER (RPPM) CERTIFICATION PROGRAM

- (5) Respirator cleaning, maintenance, and inspection
- (6) Qualitative and quantitative fit testing, including actual laboratory fit testing
- (7) Breathing air quality
- (8) Medical considerations

The course certificate from the OSHA, NIOSH or Navy RPPM course is required as proof of training. If another course is attended, both the course certificate and the course syllabus (specifying training topics and number of hours) are required.

4. NAVENVIRHLTHCEN and the Navy Environmental and Preventive Medicine Units (NAVENPVNTMEDUs) will, however, continue to teach the 40-hour Navy RPPM Course (CIN 5-322-2322) and the 8-hour Refresher Training Course (CIN 5-322-2323). The Refresher Training Course will be offered contingent upon quota demand and is projected to be offered twice in FY 95.

5. The intent of these program changes is to reduce the administrative burden and simplify RPPM requirements while continuing to keep focus on high quality respiratory protection training.

6. Request widest dissemination of this information. Point of contact at NAVENVIRHLTHCEN is Ms. Pat Krevonick, Industrial Hygiene Field Support Department (NENC-33C1), DSN 564-7575 or (804) 444-7575, extension 250. Point of contact at this bureau is Commander Paul Gillooly, MSC, USN, Head, Occupational Health, Safety and Environment Branch, DSN 294-2624 or (202) 653-1624.

  
S. O. CURNION  
By direction

Distribution:  
ASSTSECNAV SL  
CNO (N45, N454, N454C)  
CINCLANTFLT (N4433, B4433A)  
CINCPACFLT (N45, Code 72)  
CINCSNAVEUR (N74)  
CNET (N62, TPER/S)  
PRESINSGRV  
INSURVLANT  
INSURVPAC

# Topics For Future Issues

---

Respirators for entry into immediately dangerous to life or health (IDLH) atmospheres aboard ship

New Naval Ship's Technical Manual procedures for entry into IDLH atmospheres

NAVSEA replacing OBA, EEBD, and SEED

New respirator certification standards, 42 CFR 84

Asbestos update

BITREX - a new fit testing protocol

Proposed 29 CFR 1910.134

Controlled Negative Pressure fit testing

Generic spectacle kits

Respiratory protection for isocyanate spray painting

Breathing air test kits

Isoamyl acetate in the national stock system

Appendix (3)

A GUIDE FOR RESPIRATORY PROTECTION PROGRAM MANAGERS  
USER EVALUATION FORM

Name of Submitting Organization/Individual

---

Address (Street, City, State, ZIP Code)

---

Problem Area

---

Page Number and Wording:

Recommended Wording:

Reason/Rationale for Recommendation:

Remarks

---

Name of Submitter (optional)

---

Telephone

---

DSN:

Commercial:

Date Submitted:

---

Appendix A4

Place  
Stamp

Commanding Officer  
Navy Environmental Health Center  
2510 Walmer Avenue (Attn: IH)  
Norfolk, VA 23513-2617

**Fold here to mail**